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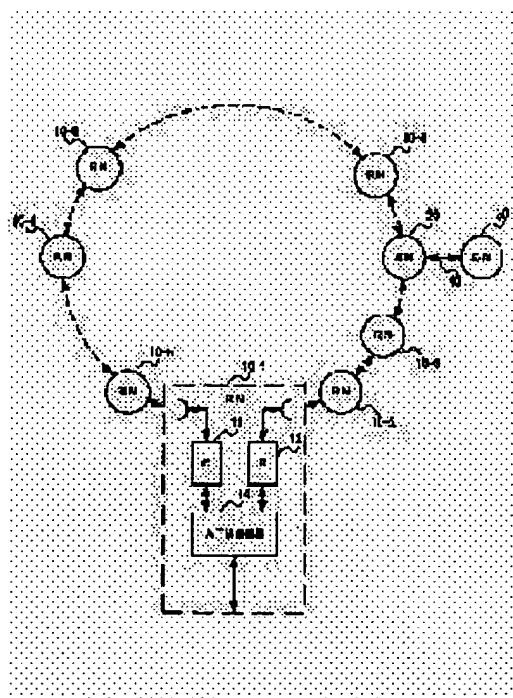
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SHIGEAKI**

(54) RADIO ACCESS SYSTEM SUPERVISORY AND CONTROL SYSTEM

(57)Abstract:

PROBLEM TO BE SOLVED: To reduce cost by simplifying a structure by transmitting the supervisory and control information of radio equipment with the section overhead(SOH) of an SDH system in a radio block and transmitting the information while converting it to an ATM system on the other route.

SOLUTION: Remote nodes RN10-1 to 10-n most in the system insert/separate the



supervisory and control information of radio equipment to the SDH system SOH through the radio equipment itself because of wireless transmission and this processing at the ATM exchanges of RB 10-1 to 10-n is unnecessary. Since the interval between a base node BN 20 and a center node CN 30 is made into optical fiber transmission of a general public line, on the other hand, the CN 30 disables the control signal processing of radio equipment because of the installation of ATM exchange only. Then, the ATM exchange of the BN 20 inserts/separates the radio equipment supervisory and control information of transmission to any ATM cell through the SOH of the SDH system and the information is transmitted between the BN 20 and the CN 30 by the ATM system of optical fiber transmission. Therefore, the transmission can be dealt with by the standard ATM exchange.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention carries out the information transmission of the wireless section to a transmission line with the frame structure of an SDH method using a walkie-talkie, the wireless section transmits the supervisory-control information on a walkie-talkie using the section overhead of an SDH method about the wireless access system supervisory-control method which carries out the interface of that information a subscriber side through an ATM switching system in detail, and the other path is related with the wireless access system monitor method which transforms into an ATM method and was transmitted.

[0002]

[Description of the Prior Art] Drawing 9 is the block diagram showing an example of the conventional wireless network system which adopted and constituted this kind of wireless access system supervisory-control method.

[0003] drawing 9 -- setting -- this -- wireless -- a network system -- two or more -- a set -- a remote node -- (-- RN --) -- ten - one - ten - n -- one -- a set -- the base -- a node -- (-- BN --) -- 20 -- wireless -- wireless -- a circuit -- minding -- a ring -- ** -- connecting -- the base -- a node -- 20 -- a center -- a node -- (-- CN --) -- 30 -- connecting -- constituting -- having .

[0004] Here each remote node 10-1 - 10-n Provide 11, 12, and the SDH terminal equipment 13, and it is constituted. the detail configuration is shown about a remote node 10-1 -- as -- two sets (R) of walkie-talkies -- Informational transmission is performed with the frame (SDH frame) of an SDH (Synchronous Digital Hierarchy) method at the wireless section between each remote node 10-1 - 10-n, and the base node 20. The supervisory-control

information on each walkie-talkie 11 and 12 of each remote node 10-1 - 10-n is transmitted using the section overhead (SOH) of the frame of an SDH method.

[0005] In such a configuration, the supervisory-control information on each walkie-talkies 11 and 12 is put on the section overhead of the SDH frame, or processing which takes out the supervisory-control information on each walkie-talkies 11 and 12 from the section overhead of this SDH frame is performed by the SDH terminal equipment 13 of each remote node 10-1 - 10-n.

[0006] Drawing 10 is the block diagram having shown the detail configuration of a remote node shown in drawing 9.

[0007] In addition, although the detail configuration of a walkie-talkie 12 is shown, a walkie-talkie 11 also becomes drawing 10 from the same configuration.

[0008] In drawing 10, a walkie-talkie 12 consists of the outdoor units (ODU) 110 and the inside-of-a-house units (IDU) 120 which are connected to an antenna 130, the main signal system processing section 121 and the supervisory-control section 122 are formed in the inside-of-a-house unit 120, while the main signal system processing section 121 is connected to the outdoor unit 110 and the SDH terminal equipment 13, the supervisory-control section 122 is connected and the terminal 140 for maintenance is connected to the supervisory-control section 122.

[0009] Here, insertion/separation of the supervisory control signal of the walkie-talkie 12 to the section overhead of the SDH frame transmitted in the wireless section are performed by the SDH terminal equipment 13 through the supervisory-control section 122.

[0010]

[Problem(s) to be Solved by the Invention] However, it sets to the above-mentioned conventional wireless network system. As mentioned above, in having formed the SDH terminal equipment 13 in each remote node 10-1 - 10-n and connecting this wireless network system with the system of an ATM method Drawing 11 which whose ATM switching system other than this SDH terminal equipment 13 was needed, and had the problem that a configuration was complicated for this reason and cost became high It is the block diagram having shown other detail configurations of the remote node of the conventional wireless network system proposed in order to solve the problem of the wireless network system shown in drawing 9 and drawing 10.

[0011] In the configuration shown in drawing 11, the ATM switching system

is connected to the main signal system processing section 121 and the supervisory-control section 122 of the inside-of-a-house unit 120 of a walkie-talkie 12 instead of the SDH terminal equipment 13 shown in drawing 10.

[0012] In the configuration shown in this drawing 11, insertion/separation of the supervisory control signal of the walkie-talkie 12 to the section overhead of the SDH frame are performed by ATM switching system 14 through the supervisory-control section 122.

[0013] However, in the configuration of drawing 11, another problem that it was necessary to carry the function which carries out termination of the section overhead of the repeater section which essentially originally is not needed as an ATM switching system in ATM switching system 14 for the monitor of a walkie-talkie 12, the structure of ATM switching system 14 became complicated by this, and cost became high arose.

[0014] And the function which carries out termination of the section overhead of this repeater section needed to be carried in the ATM switching system of all the remote nodes 10-1 - 10-n, and the base node 20, respectively, for this reason that effect to do also became large.

[0015] Moreover, the method which sets to ATM switching system 14, and inserts / separates the supervisory control signal of a walkie-talkie 12 in one ATM cel of the ATM methods as another method is also proposed.

[0016] although it becomes unnecessary to carry out termination of the section overhead for the repeater sections in the SDH frame in the ATM switching system 14 interior according to this configuration -- instead -- ** -- it is necessary to carry out and to prepare insertion / function to separate for the supervisory-control information on a walkie-talkie 12 in all the ATM switching system 14 interior to the inside of one ATM cel of the ATM methods

[0017] And problem drawing student **** that only the part of the above-mentioned function needs to have complicated structure, and needs to carry the high ATM switching system of cost in all the remote nodes 10-1 - 10-n, and the base node 20, and the cost as the whole system becomes high for this reason.

[0018] Furthermore, in all the remote nodes 10-1 - 10-n, and the base node 20, although the section overhead of the SDH frame was vacant, since it was necessary to perform processing which inserts / separates the monitor **** information on a walkie-talkie at an ATM cel, the problem that the utilization ratio of a circuit fell arose.

[0019] Then, structure is easy and this invention aims to let it offer the

wireless access system supervisory-control method which can also press down cost.

[0020]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, it is characterized by for invention according to claim 1 carrying out the information transmission of the wireless section to a transmission line with the frame structure of an SDH method using a walkie-talkie, and for the wireless section transmitting the supervisory-control information on a walkie-talkie using the section overhead of an SDH method in the wireless access system supervisory-control method which carries out the interface of the information a subscriber side through an ATM switching system, and changing and transmitting the other path to an ATM method.

[0021] Moreover, in invention according to claim 1, in case invention according to claim 2 changes into an ATM method the supervisory-control information on the walkie-talkie which put on the section overhead of said SDH method, it prepares the ATM cel of dedication, puts the supervisory-control information on said walkie-talkie on the ATM cel only for these, and is characterized by to transmit the supervisory-control information on this walkie-talkie in another cel with the main signal cel for users, and the ATM cel for ATM system monitor regulation control.

[0022] Moreover, in invention according to claim 1, in case invention according to claim 3 changes into an ATM method the supervisory-control information on the walkie-talkie which put on the section overhead of said SDH method, it puts the supervisory-control information on said walkie-talkie into an ATM system supervisory-control cel, and is characterized by transmitting in another cel with the main signal cel for users.

[0023] Moreover, in invention according to claim 1, in case invention according to claim 4 changes into an ATM method the supervisory-control information on the walkie-talkie which put on the section overhead of said SDH method, it is characterized by putting and transmitting the supervisory-control information on said walkie-talkie to the same ATM cel as the cel which transmits the main signal for ATM system users, and the signal for ATM system monitor regulation control.

[0024]

[Embodiment of the Invention] Hereafter, the gestalt of operation of the wireless access system supervisory-control method concerning this invention is explained to a detail with reference to an accompanying drawing.

[0025] Drawing 1 is the block diagram showing the gestalt of 1 operation of

the wireless network system which adopted and constituted the wireless access system supervisory-control method concerning this invention.

[0026] In addition, ** which gives the same sign as **** used in the expedient above figure 9 of explanation to the part which achieves the same function as the conventional wireless network system shown in drawing 9 in drawing 1.

[0027] drawing 1 -- setting -- this -- wireless -- a network system -- two or more -- a set -- a remote node -- (-- RN --) -- ten - one - ten - n -- one -- a set -- the base -- a node -- (-- BN --) -- 20 -- wireless -- wireless -- a circuit -- minding -- a ring -- ** -- connecting -- constituting -- having . And the center node (CN) 30 is connected to the base node 20 through the optical fiber 40.

[0028] here, as for each remote node 10-1 - 10-n, the detail configuration is shown about a remote node 10-1 -- as -- two sets (R) of walkie-talkies -- 11, 12, and ATM switching system 14 are provided, and it is constituted.

[0029] In the configuration shown in drawing 1, each remote node 10-1 - 10-n have the interface with a user, respectively, informational transmission is performed on radio at the wireless section between each remote node 10-1 - 10-n, and the base node 20, and informational transmission is performed through an optical fiber 40 between the base node 20 and the center node 30.

[0030] Now, in the configuration shown in drawing 1, the wireless section is transmitted for the supervisory-control information on the walkie-talkies 11 and 12 of each remote node 10-1 - 10-n, and the base node 20 using the section overhead of an SDH method, and the other path is changed and transmitted to an ATM method.

[0031] That is, by ATM switching system 14 the very thing, the supervisory-control information on ATM switching system 14 self of each remote node 10-1 - 10-n, and the base node 20 is inserted/separated, and is transmitted in an ATM cel, and intensive supervisory control is carried out with the network administration equipment (NMS) currently installed in the center node 30.

[0032] Moreover, the section overhead (SOH) of the SDH frame of an SDH method inserts / dissociates in a walkie-talkie 11 and the 12 interior, and the supervisory-control information on the walkie-talkies 11 and 12 of each remote node 10-1 - 10-n, and the base node 20 is transmitted in the wireless section between each remote node 10-1 - 10-n, and the base node 20.

[0033] The supervisory-control information on the walkie-talkie transmitted to the base node 20 is separated / inserted by the walkie-talkie currently installed in the base node 20, and is inserted / separated by the ATM cel by the ATM switching system currently similarly installed in the base node 20.

[0034] Then, this ATM cel is transmitted between the center nodes 30 through an optical fiber 40.

[0035] Moreover, intensive supervisory control of the walkie-talkie supervisory-control information separated / inserted from ATM by the ATM switching system currently installed in the center node 30 is carried out with the supervisory-control information on an ATM switching system by the network administration equipment currently similarly installed in the center node 30.

[0036] Drawing 2 is the block diagram having shown the detail configuration of a remote node 10-1 - 10-n shown in drawing 1.

[0037] In addition, although the detail configuration of a walkie-talkie 12 is shown, a walkie-talkie 11 also becomes drawing 2 from the same configuration.

[0038] In drawing 2, the walkie-talkie 12 of a remote node 10 (10-1 - 10-n) consists of the outdoor units (ODU) 110 and the inside-of-a-house units (IDU) 120 which are connected to an antenna 130.

[0039] Here, the main signal system processing section 121, the supervisory-control section 122, and the SOH processing section 123 are formed in the inside-of-a-house unit 120.

[0040] The main signal system processing section 121 is connected to the supervisory-control section 122 and the SOH processing section 123 while connecting with the outdoor unit 110 and ATM switching system 14.

[0041] Moreover, the SOH processing section 123 and the terminal 140 for maintenance are connected to the supervisory-control section 122.

[0042] Moreover, the SV section 160 and the OW section 150 are connected to the SOH processing section 123, and the headset 170 is connected to the OW section 150.

[0043] In the above-mentioned configuration, the supervisory-control information inside a walkie-talkie 12 is changed into the supervisory control signal ALM of a format predetermined in the supervisory-control section 122, and is transmitted between the SV sections 160.

[0044] On the other hand, in the SV section 160, processing which inserts / separates the above-mentioned supervisory control signal ALM at DCC data (D1-D3) is performed. And in the SOH processing section 123, processing which inserts / separates DCC data (D1-D3) at the section overhead (SOH) of the frame of an SDH method is performed.

[0045] Moreover, the supervisory-control information on the walkie-talkie of other nodes is transmitted by the root contrary to the main signal system

processing section 121, the SOH processing section 123, DCC data (D1-D3), the SV section 160, and the above, and can carry out supervisory control at the terminal 140 for maintenance.

[0046] Supervisory control also of the supervisory-control information on an own walkie-talkie can be carried out to coincidence at the terminal 140 for maintenance.

[0047] Moreover, in the OW section 150, an analog / digital conversion is carried out, and an orderwire signal is inserted / separated by E1 byte of a section overhead (SOH). And this E1 byte signal is inserted / separated by E1 byte of SOH in the section overhead (SOH) of the frame of an SDH method in the SOH processing section 123. The orderwire signal from other nodes is transmitted to the OW section 150 by the root contrary to the above.

[0048] On the other hand, when a transmission error occurs in the self-node wireless section, it is changed into the data format inserted / separated by the ERR (B1) cutting tool in the SV section 160, and is inserted / separated by B1 byte of SOH as error information in the SOH processing section 123 while data processing of predetermined is carried out in the supervisory-control section 122 and being able to carry out the monitor of the error information at the terminal 140 for maintenance as a supervisory control signal ALM.

[0049] Moreover, when a transmission error occurs in an opposite node, a monitor can be carried out at the terminal 140 for maintenance from the B1 byte error information sent from an opposite node by the root contrary to the above.

[0050] Furthermore, it inserts/dissociates and the SV section 160 transmits the transmission error information generated in the self-node to DCC data (D1-D3) to other nodes.

[0051] Drawing 3 is the block diagram having shown the detail configuration of the base node 20 shown in drawing 1.

[0052] In drawing 3, the base node 20 possesses an antenna 211, a walkie-talkie 210, an antenna 221, a walkie-talkie 220, SV and the OW section 240, ATM switching system 230, and the terminal 250 for maintenance, and is constituted.

[0053] Here, SV and the OW section 240 are what showed the configuration corresponding to the SV section 160 and the OW section 150 which were shown in drawing 2 as 1 Brock, and this SV and the OW section 240 are connected with the walkie-talkie 210 and the walkie-talkie 220 through Rhine which transmits a supervisory control signal ALM, E1 byte (OW) B1 byte (ERR), and DCC data (D1-D3), respectively.

[0054] Moreover, ATM switching system 230 possesses the ATM switch 232, the ATM switch 233, the DCC interface section 243, and the system-switching section 231, and is constituted. And the ATM switch 233 is connected between a walkie-talkie 210 and the system-switching section 231, while the DCC interface section 234 is connected to the ATM switch 232 and the ATM switch 233, it connects with SV and the OW section 240, and the ATM switch 232 is connected between a walkie-talkie 220 and the system-switching section 231, and the system-switching section 231 is connected to the center node 30 shown in drawing 1.

[0055] Moreover, the terminal 250 for maintenance is connected to Rhine which transmits the supervisory control signal ALM between a walkie-talkie 210 and a walkie-talkie 220, SV, and the OW section 240.

[0056] In the above-mentioned configuration, the supervisory control signal of the walkie-talkie of all the remote nodes 10-1 - 10-n connected to this base node 20 is transmitted to the walkie-talkie 210 and walkie-talkie 220 of the base node 20 by the section overhead (SOH) of the SDH frame of an SDH method.

[0057] In the walkie-talkie 210 and walkie-talkie 220 of the base node 20, further, a section overhead (SOH) is separated / inserted from the SDH frame of this SDH method, E1 byte (OW) B1 byte (ERR) and DCC data (D1-D3) are separated / inserted, these signals are changed into a predetermined data format, and SV and the OW section 240 are transmitted to the DCC interface section 243.

[0058] In the DCC interface section 234, OW signal and the DCC signal from all the above-mentioned nodes are transmitted to the ATM switch 232 and the ATM switch 233 in a predetermined format, and the supervisory control signal of these walkie-talkies is changed into an ATM cel with the signal of other ATM systems with the ATM switch 232 and the ATM switch 233.

[0059] Drawing 4 is the block diagram having shown the detail configuration of the center node 30 shown in drawing 1.

[0060] In drawing 4, the center node 30 possesses ATM switching system 300, network supervisory equipment (NMS equipment) 310, and the OW section 320, and is constituted.

[0061] ATM switching system 300 possesses the system-switching section 301, the DCC interface 302, the ATM switch 303, the ATM switch 304, and the ATM switch 305, and is constituted here. The system-switching section 301 is connected to the ATM switch 303 and the ATM switch 304 while connecting with the base node 20 shown in drawing 1. The DCC interface

302 it connects with network supervisory equipment (NMS equipment) 310 and the OW section 320 -- it both connects with the ATM switch 303, the ATM switch 304, and the ATM switch 305.

[0062] In the above-mentioned configuration, the supervisory signal of the walkie-talkie transmitted in the ATM cel from the base node 20 is inputted into the ATM switch 303 and the ATM switch 304 via the system-switching section 301, and is separated / inserted as a predetermined data format here. And it is separated into the supervisory control signal and OW signal of a walkie-talkie by the DCC interface 302, and is transmitted to NMS equipment 310 and the OW section 320.

[0063] NMS equipment 310 carries out supervisory control of the supervisory control signal of the walkie-talkie transmitted from the above-mentioned DCC interface 302, and the OW section 320 talks over the telephone based on OW signal transmitted from the above-mentioned DCC interface 302.

[0064] Moreover, the signal transmitted to other nodes from the NMS equipment 310 and the OW section 320 of this center node 30 is transmitted by the above-mentioned reverse root.

[0065] Drawing 5 is drawing showing the configuration of the STM-1 section overhead adopted with the wireless network system shown in drawing 1 , and drawing 6 is drawing having shown an example of a conversion method which changes into an ATM cel the walkie-talkie supervisory control signal adopted with the wireless network system shown in drawing 1 .

[0066] In the conversion method shown in drawing 6 , the ATM cel for transmitting the supervisory control signal of a walkie-talkie is prepared independently of other ATM cels, and among other ATM cels, the ATM cel for transmitting the supervisory control signal of a walkie-talkie is inserted suitably, and is transmitted.

[0067] That is, in drawing 6 , an ATM cel (for user interface main signals) is an ATM cel for transmitting a user interface main signal, and, generally consists of 53 bytes.

[0068] Moreover, an ATM cel (for ATM system supervisory control signals) is an ATM cel for transmitting the supervisory control signal of a user interface or the ATM switching system itself, and, generally this ATM cel also consists of 53 bytes.

[0069] Moreover, an ATM cel (for walkie-talkie supervisory control) is an ATM cel prepared in order to transmit the supervisory control signal of a walkie-talkie, and, generally this ATM cel also consists of 53 bytes.

[0070] Drawing 7 is drawing having shown other examples of the conversion

method which changes into an ATM cel the walkie-talkie supervisory control signal adopted with the wireless network system shown in drawing 1 .

[0071] In the conversion method shown in drawing 7 , the supervisory control signal of a walkie-talkie is put and transmitted into the ATM cel which transmits the supervisory control signal of an ATM system.

[0072] That is, in drawing 7 , an ATM cel (for user interface main signals) is an ATM cel for transmitting a user interface main signal, and, generally consists of 53 bytes.

[0073] Moreover, an ATM cel (for the supervisory control signals of an ATM system and a walkie-talkie) is an ATM cel for transmitting the supervisory control signal of a user interface or the ATM switching system itself, and the signal for supervisory control of a walkie-talkie, and, generally this ATM cel also consists of 53 bytes.

[0074] Drawing 8 is drawing having shown the example of further others of the conversion method which changes into an ATM cel the walkie-talkie supervisory control signal adopted with the wireless network system shown in drawing 1 .

[0075] In the conversion method shown in drawing 8 , a user interface signal, the supervisory control signal of an ATM system, and the supervisory control signal of a walkie-talkie are multiplexed and transmitted in the same ATM cel. Processing which changes into an ATM cel the walkie-talkie supervisory control signal shown in above-mentioned drawing 6 thru/or drawing 8 is performed within the base node 20 shown in drawing 3 .

[0076] As mentioned above, in this wireless network system, a walkie-talkie supervisory control signal is transmitted using the section overhead (SOH) of an SDH method in the radio-transmission section, and it transmits using the ATM cel of an ATM method between the base node (BN) 20 and the center node (CN) 30. It becomes unnecessary not to insert the transmission information on termination *Perilla frutescens* (L.) Britton var. *crispa* (Thunb.) Decne., / to separate it for SOH for the repeater sections by no ATM switching system of nodes, thereby.

[0077] Since most numerous remote node (RN)10-1 - 10-n is based on the radio transmission in the system, it becomes unnecessary that is, to perform this processing at the ATM switching system of remote node (RN)10-1 - 10-n by performing insertion/separation for the supervisory-control information on a walkie-talkie to SOH of a walkie-talkie [itself] appearance SDH method.

[0078] On the other hand, since it is not based on a radio transmission between the base node (BN) 20 and the center node (CN) 30, but it is based on

the optical fiber transmission which is a general public line, the walkie-talkie is not used and only the ATM switching system is installed in the center node (CN) 30, it cannot process the control signal of a walkie-talkie.

[0079] Then, the supervisory-control information on the walkie-talkie which was being transmitted by SOH of an SDH method in the ATM switching system of the base node (BN) 20 is inserted / re-separated at one ATM cel of the ATM methods. The supervisory signal of a walkie-talkie can be transmitted between the base node (BN) 20 and the center node (CN) 30 by carrying out like this by the ATM method which used the optical fiber transmission system.

[0080] And although the supervisory-control information on the walkie-talkie transmitted by SOH is reput on an ATM cel by the base node (BN) 20, since it is conversion in an ATM cel also in that case, it can respond by the standard ATM switching system.

[0081] Thus, in this wireless network system, since the wireless section puts the supervisory-control information on a walkie-talkie on the section overhead (SOH) of an SDH method, and sends it, the payload of an SDH method can be used efficiently and an ATM switching system can moreover use a standard thing without the need of carrying out termination of the SOH of all nodes, the abundant supervisory-control information about the walkie-talkie of each node can be efficiently transmitted by low cost, and the good system of maintainability can be realized by low cost.

[0082]

[Effect of the Invention] Since it constituted so that the wireless section transmitted the supervisory-control information on a walkie-talkie using the section overhead of an SDH method according to this invention as explained above, and the other path might be changed into an ATM method and it might transmit Since the payload of an SDH method can be used efficiently and an ATM switching system can moreover use a standard thing without the need of carrying out termination of the SOH of all nodes The abundant supervisory-control information about the walkie-talkie of each node can be efficiently transmitted by low cost, and the effectiveness that the good system of maintainability is realizable by low cost is done so.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the gestalt of 1 operation of the wireless network system which adopted and constituted the wireless access system supervisory-control method concerning this invention.

[Drawing 2] It is the block diagram having shown the detail configuration of a remote node shown in drawing 1 .

[Drawing 3] It is the block diagram having shown the detail configuration of a base node shown in drawing 1 .

[Drawing 4] It is the block diagram having shown the detail configuration of a center node shown in drawing 1 .

[Drawing 5] It is drawing showing the configuration of the STM-1 section overhead adopted with the wireless network system shown in drawing 1 .

[Drawing 6] It is drawing having shown an example of a conversion method which changes into an ATM cel the walkie-talkie supervisory control signal adopted with the wireless network system shown in drawing 1 .

[Drawing 7] It is drawing having shown other examples of the conversion method which changes into an ATM cel the walkie-talkie supervisory control signal adopted with the wireless network system shown in drawing 1 .

[Drawing 8] It is drawing having shown the example of further others of the conversion method which changes into an ATM cel the walkie-talkie supervisory control signal adopted with the wireless network system shown in drawing 1 .

[Drawing 9] It is the block diagram showing an example of the conventional wireless network system which adopted and constituted this kind of wireless access system supervisory-control method.

[Drawing 10] It is the block diagram having shown the detail configuration of

a remote node shown in drawing 9 .

[Drawing 11] It is the block diagram having shown other detail configurations of the remote node of the conventional wireless network system proposed in order to solve the problem of the wireless network system shown in drawing 9 and drawing 10 .

[Description of Notations]

10-1 - 10-n Remote node (RN)

20 Base Node (BN)

30 Center Node (CN)

40 Optical Fiber

11 12 Walkie-talkie (R)

13 SDH Terminal Equipment

14 ATM Switching System

110 Outdoor Unit (ODU)

120 Inside-of-a-House Unit (IDU)

121 The Main Signal System Processing Section

122 Supervisory-Control Section

123 SOH Processing Section

130 Antenna

140 Terminal for Maintenance

150 The OW Section

160 The SV Section

170 Headset

210 Walkie-talkie

211 Antenna

220 Walkie-talkie

221 Antenna

230 ATM Switching System

231 System-Switching Section

232 ATM Switch

233 ATM Switch

234 DCC Interface Section

240 SV and the OW Section

250 Terminal for Maintenance

300 ATM Switching System

301 System-Switching Section

302 DCC Interface

303 ATM Switch

304 ATM Switch

305 ATM Switch

310 Network Supervisory Equipment (NMS Equipment)

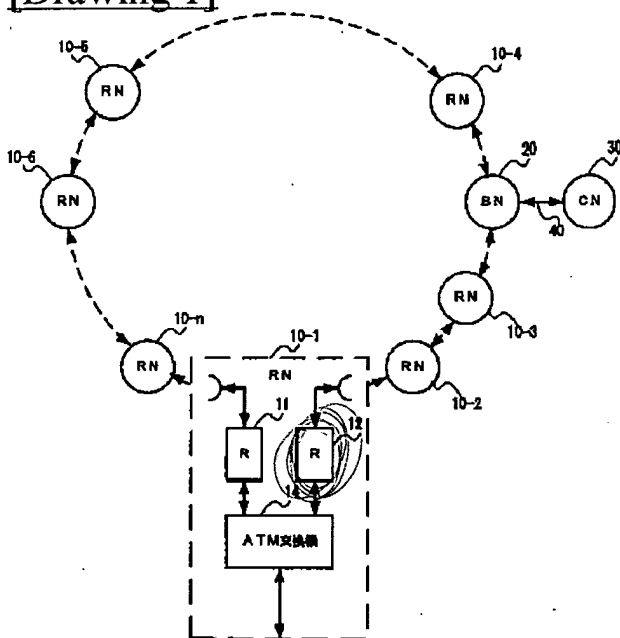
320 The OW Section

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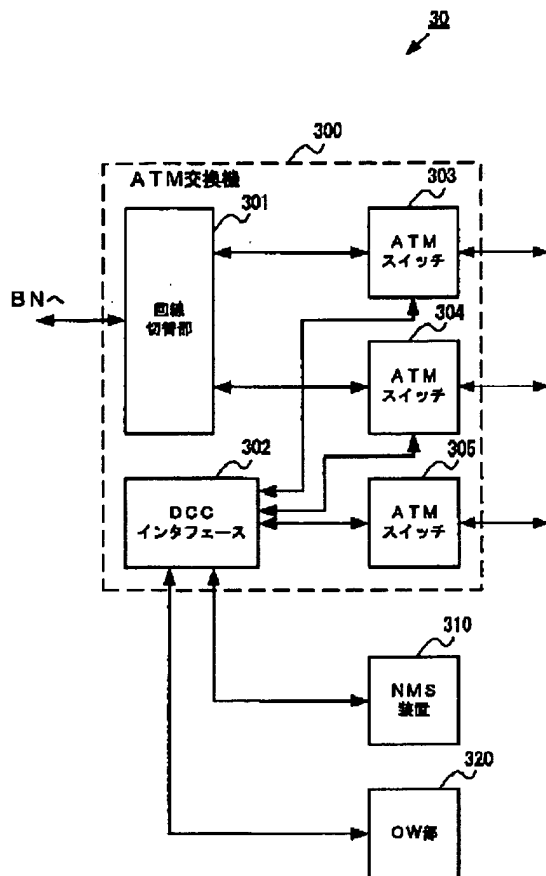
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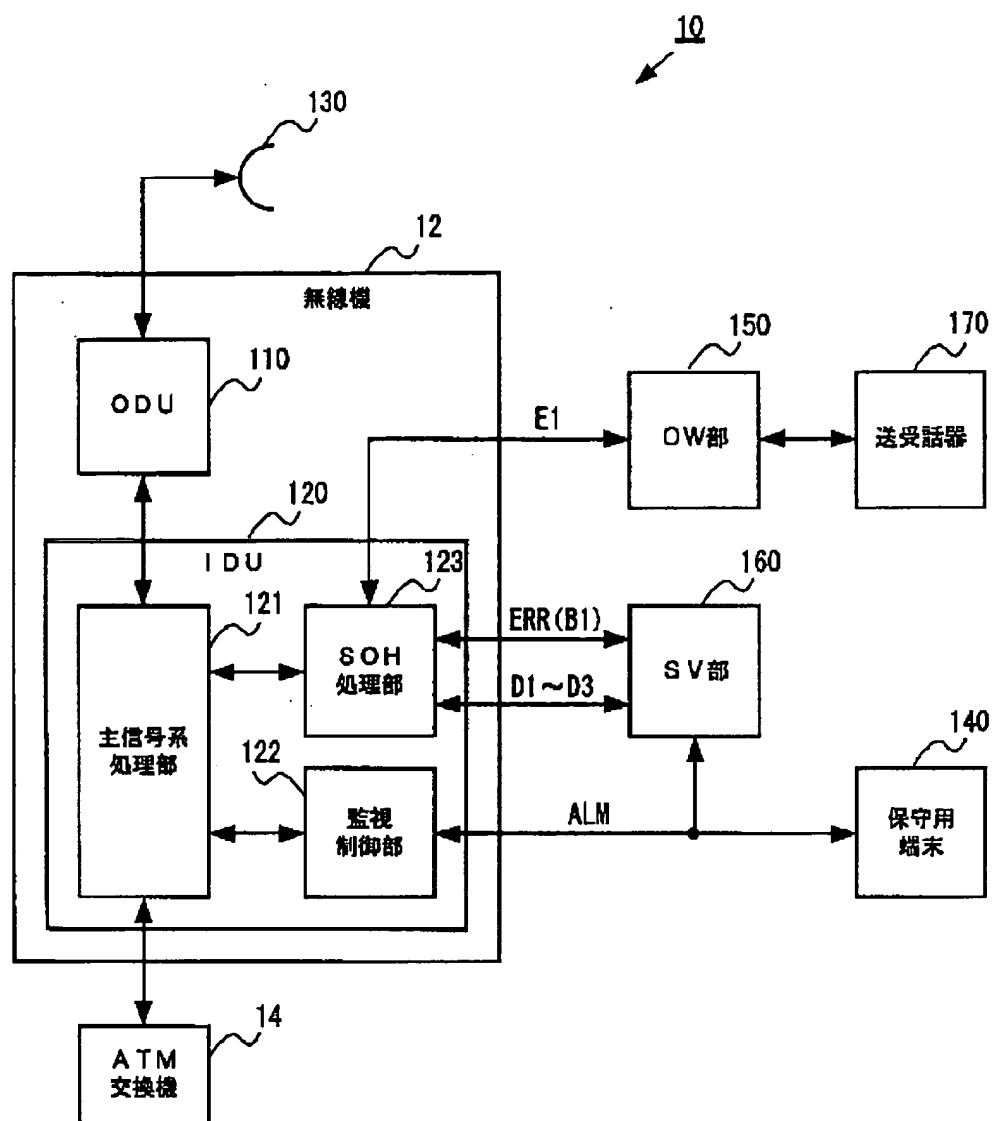
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[Drawing 1]



[Drawing 4]

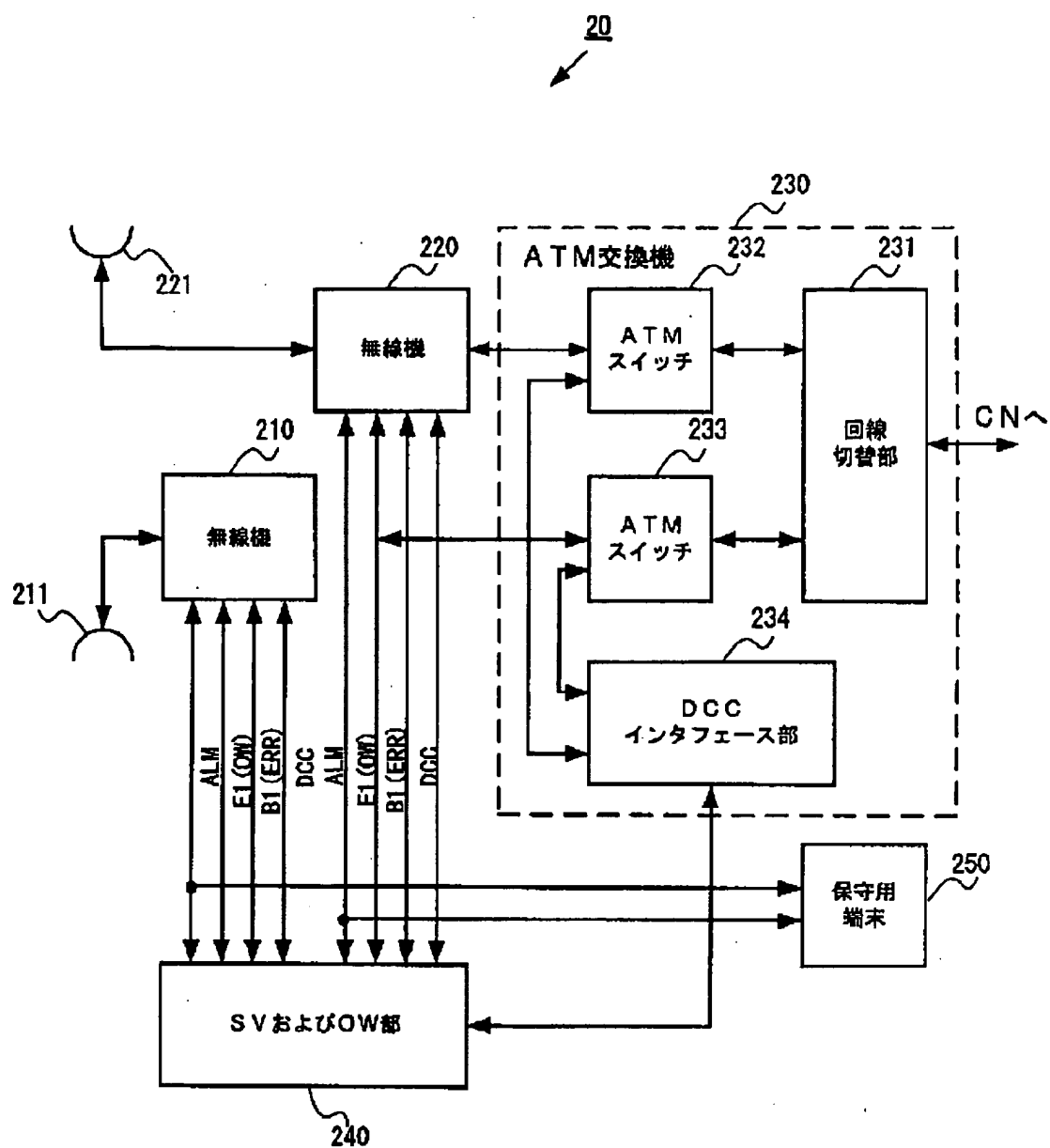
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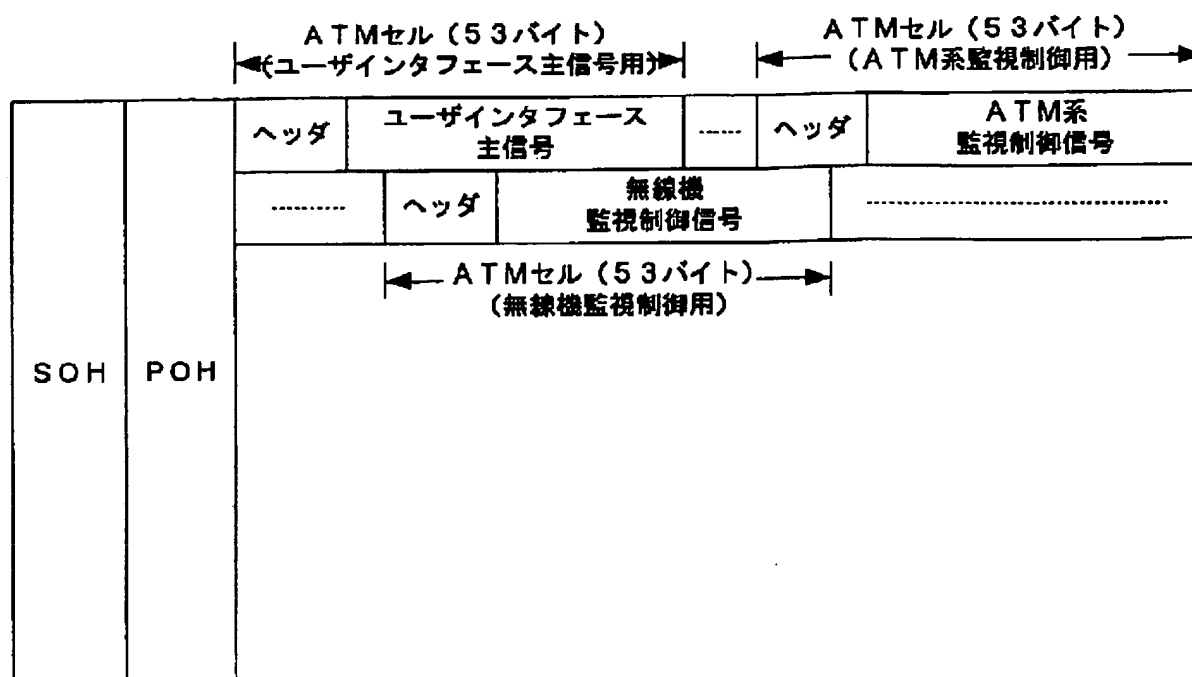
[Drawing 5]

	1	2	3	4	5	6	7	8	9	
1	A1	A1	A1	A2	A2	A2	C1			ペイロード
2	A1			E1			F1			
3	D1			D2			D3			
4	H1	H1	H1	H2	H2	H2	H3	H3	H3	
5	B2	B2	B2	K1			K2			
6	D4			D5			D6			
7	D7			D8			D9			
8	D10			D11			D12			
9	Z1	Z1	Z1	Z2	Z2	Z2	E2			
セクションオーバーヘッド										

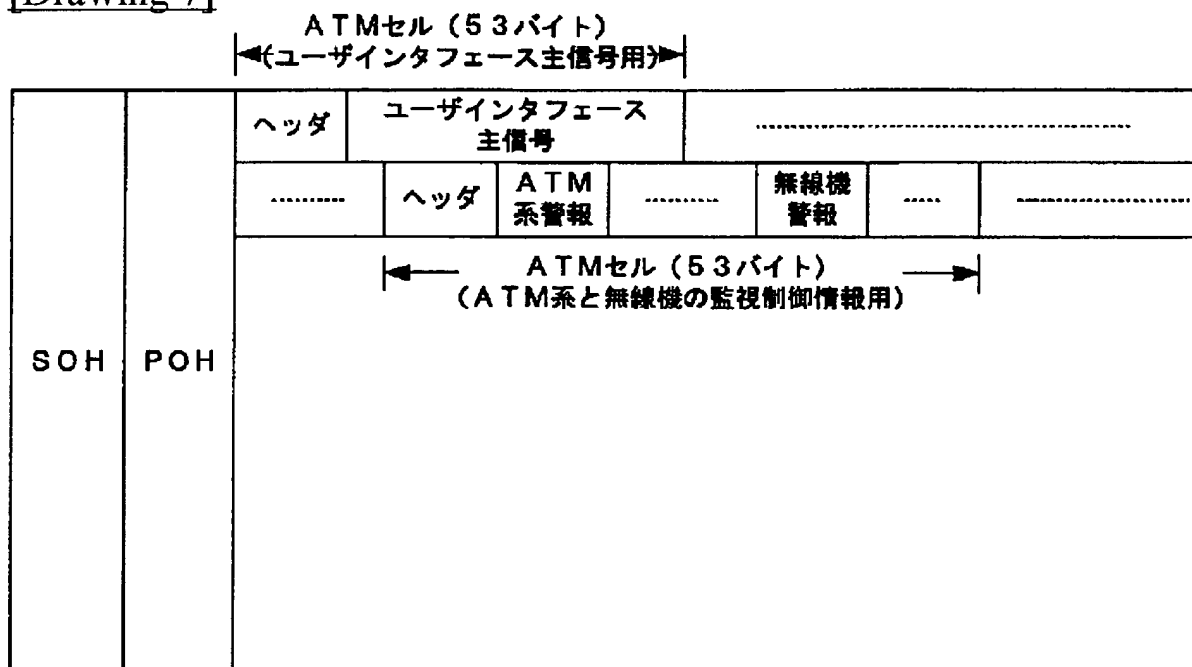
[Drawing 3]



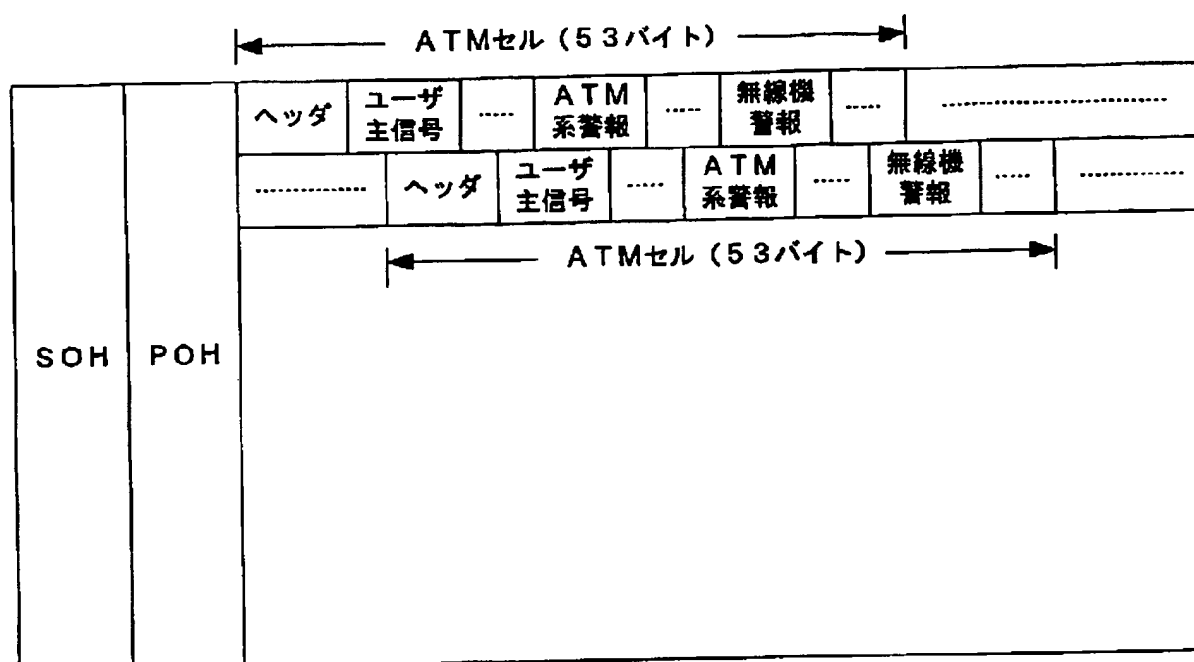
[Drawing 6]



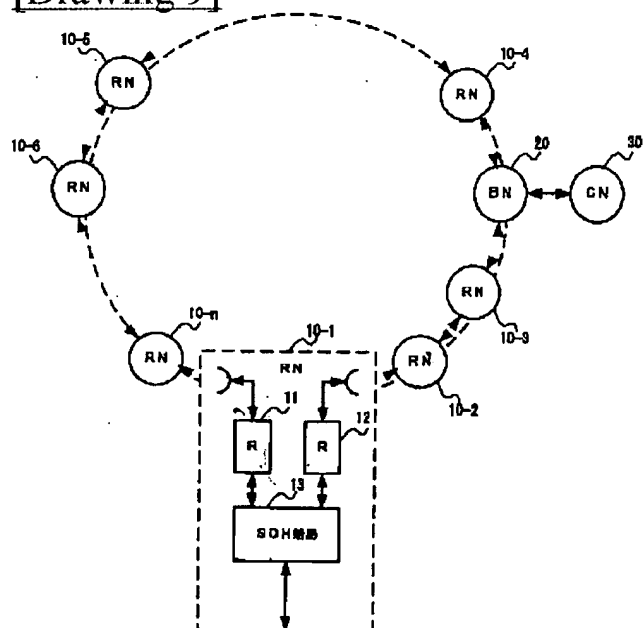
[Drawing 7]



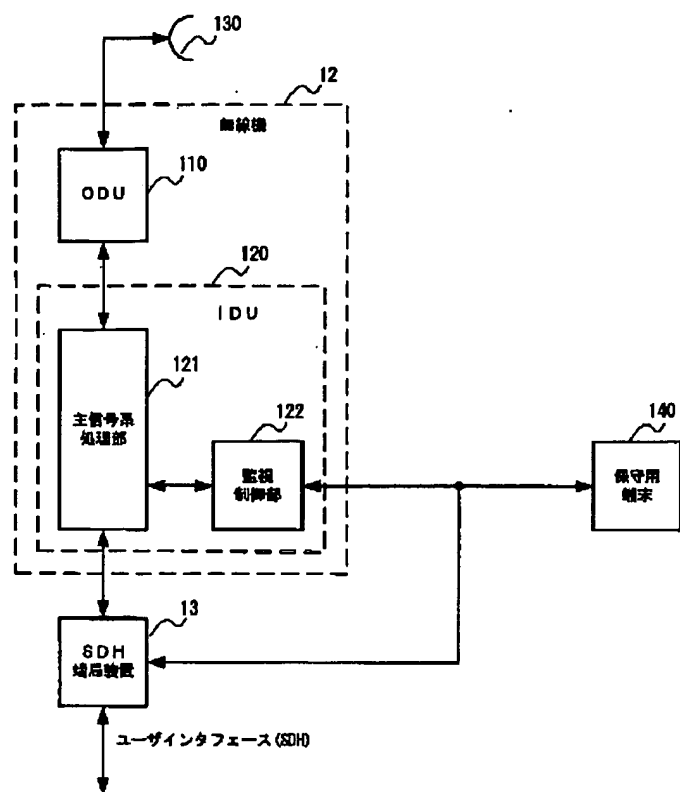
[Drawing 8]



[Drawing 9]



[Drawing 10]



[Drawing 11]

